

OVERLAPPING MUCOSAL ADVANCEMENT FLAP (OMAF)

JORDAN HOSPITAL EXPERIENCE



Overlapping Mucosal Advancement Flap

!! Seems to improve Outcome !!

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INTRODUCTION

High trans-sphincteric fistulas are defined as those with:

- *Internal opening above the dentate line or*
- *Involving > 1/3 of the external sphincter*

These fistulas require careful preoperative evaluation for definition and location.

Remain a surgical challenge.

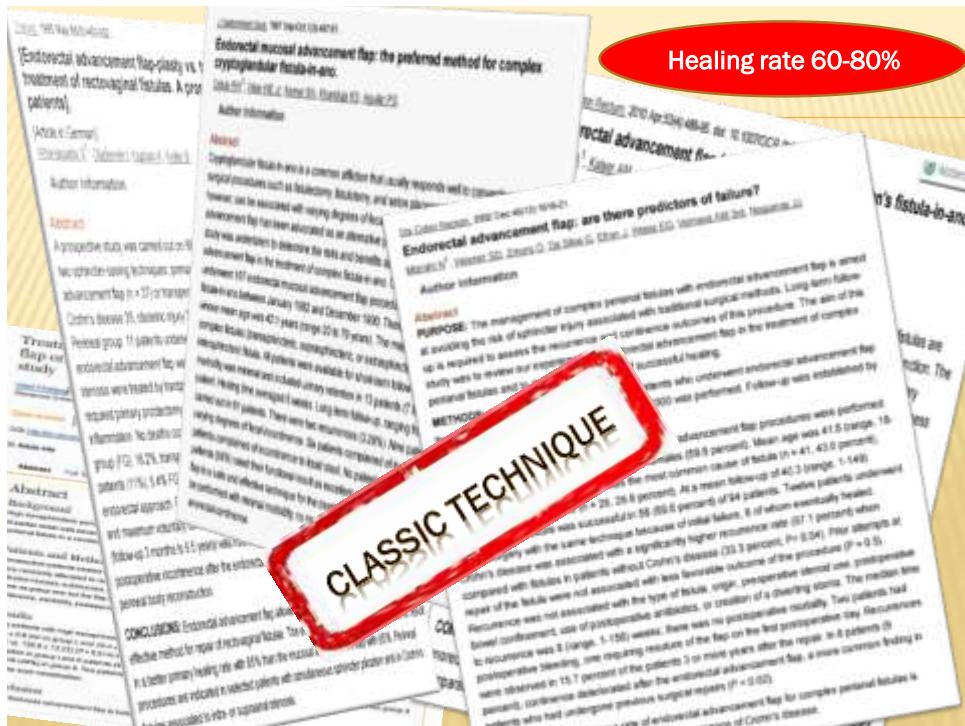
MUCOSAL ADVANCEMENT FLAP (MAF)

Remains an attractive option for complex fistula repair

- Sphincter sparing procedure
- Painless procedure.

Although predictive factors have not been identified to explain recurrence after MAF.

Recurrences were noted to have complete healing of the flap except at the site of the original internal opening (Mitalas,2007).



MUCOSAL ADVANCEMENT FLAP (MAF)

Various technical strategies to obliterate the tract and prevent re-opening of the original internal opening with MAF were introduced including

- Addition of ligation of intersphincteric tract (LIFT)
- Supplementation of plugs and glues

These supplementary procedures have not decreased recurrence rates associated with MAF (Onkelin, 2012)



OVERLAPPING MUCOSAL ADVANCEMENT FLAP

Aim:

To evaluate whether overlapping mucosal advancement flap (OMAF), which utilizes redundant proximal mucosa to overlap the flap and distal suture line, enhances outcome

Technique had been used in our division over the past 6 years.

METHOD:

Retrospective review of patients with high/complex trans-sphincteric cryptoglandular anal fistula treated with the OMAF

Single tertiary academic medical center, division of Colon and Rectal Surgery

January 2010 to January 2016

Operative procedures were conducted by single team of two surgeons

Exclusion criteria:

1. Insufficient follow up, defined as less than 3 months
2. Patients with non cryptoglandular fistulas
 - Patients with inflammatory bowel disease or malignancy
3. Patients with previous history of radiation

METHOD

High/complex transsphincteric fistulas were defined as:

Internal opening above the dentate line or involving > 1/3 of the external sphincter.

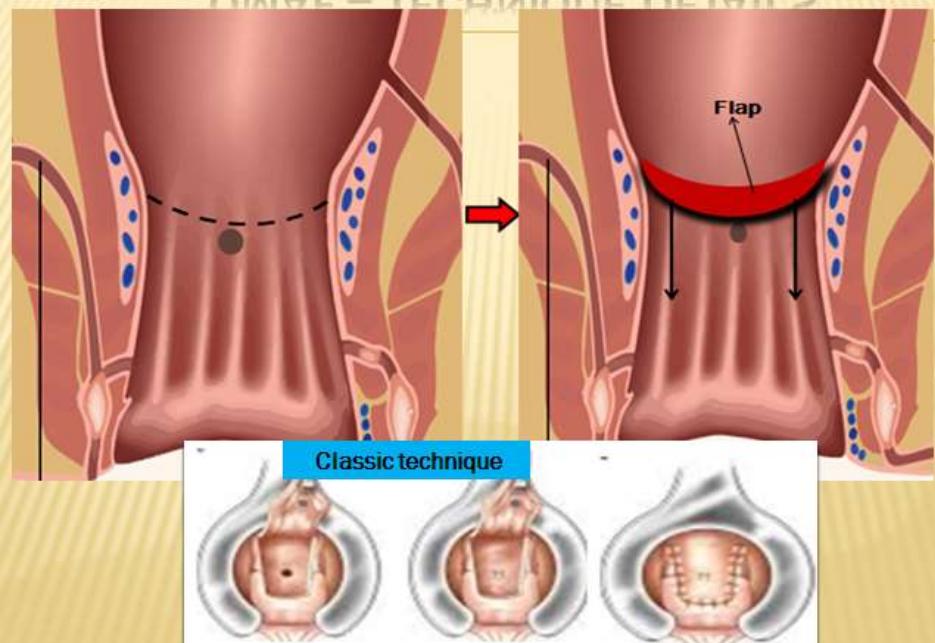
Fistula healing was defined as:

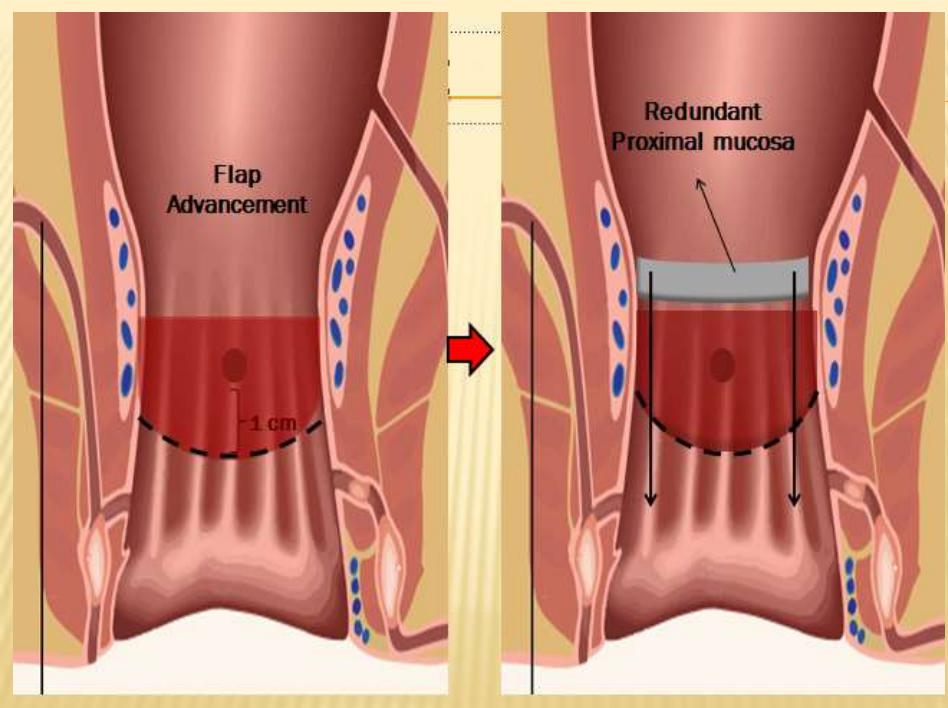
Closure of all external openings and no reported drainage with a minimum of 3-months follow-up.

Failure of treatment was defined as:

Need for additional surgery or persistence of drainage from anal canal or a patent external opening.

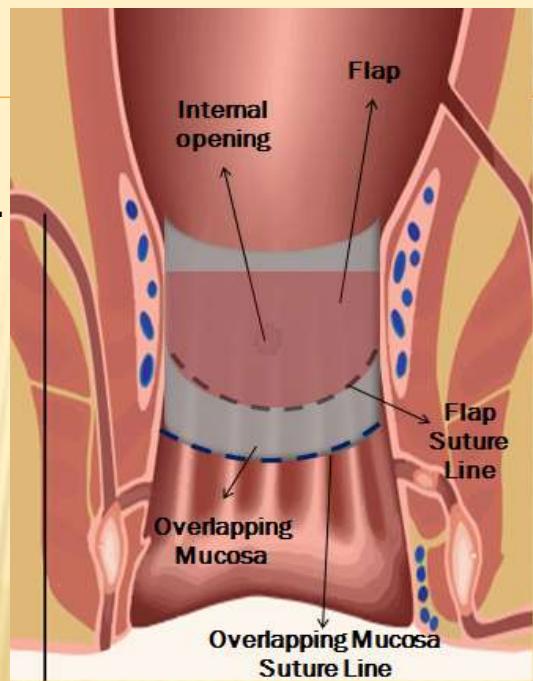
OMAF – TECHNIQUE DETAILS





OMAF

**FINAL RESULT OF
OVERLAPPING
MUCOSAL
ADVANCEMENT
FLAP (OMAF)**

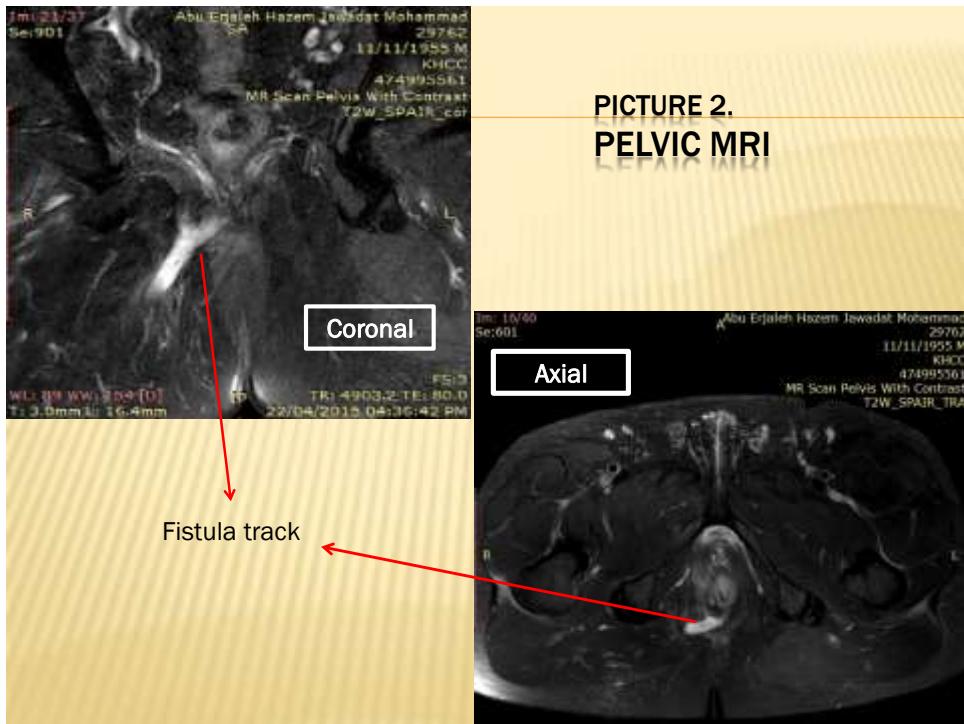


SPECIAL CONSIDERATIONS

- ✖ Fistulogram, Pelvic MRI or EAUS were used in indicated cases (picture 1,2)
- ✖ The involvement of the external sphincter was estimated by clinical evaluation at the time of surgery.
- ✖ Surgery for OMAF and repair was performed electively and/or in the absence of uncontrolled sepsis.

**PICTURE 1.
FISTULOGRAM**





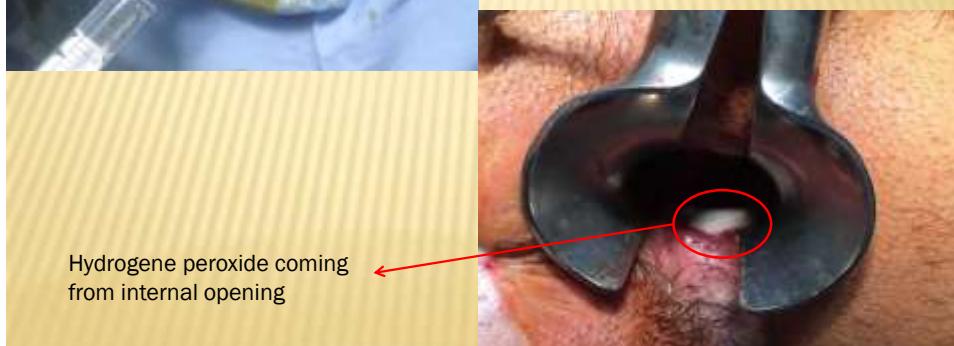
SPECIAL CONSIDERATIONS

- ✖ The involvement of the external sphincter was estimated by clinical evaluation at the time of surgery.
- ✖ Surgery for OMAF and repair was performed electively and/or in the absence of uncontrolled sepsis.
- ✖ Internal opening was identified by gentle probing of the tract (picture 3) or injection of hydrogen peroxide in the external opening (picture 4).

PICTURE 3.
PROBING OF FISTULA
TRACT



PICTURE 4.
IDENTIFICATION OF INTERNAL
OPENING BY INJECTION OF
HYDROGEN PEROXIDE IN THE
EXTERNAL OPENING



RESULTS

Table 1. Details of gender predominance

Gender	Frequency	Percent.
Males	113	90.4 %
Female	12	9.6 %
Total	125	100 %

RESULTS

Table 2. Distribution of fistula according to age group

Age	No. of cases	Percent.
20-24	9	7.2%
25-35	13	10.4%
35-44	<u>76</u>	<u>60.8%</u>
45-55	21	16.8%
56-64	4	3.2%
65-over	2	1.6%
Total	125	100%

RESULTS

Table 3. Description of main presenting symptoms

Presenting symptom	No. of cases	Percent.
PAIN & DISCHARGE	69	55.2%
DISCHARGE	19	15.2%
DISCHARGE & ITCHING	15	12.0%
SWELLING	12	9.6%
BLEEDING	9	7.2%
INCONTINENCE	1	0.8%
Total	125	100%

RESULTS

Table 4. Details of previous interventions

Previous surgery	No. of cases	Percent.
Incision and drainage	36	50.7%
Fistulotomy	24	33.8%
Hemorrhoidectomy	8	11.2%
Rubber band ligation	3	4.2%
Total	71	100%

RESULTS

Table 5. Localization of External Opening

Site of external opening	No. of cases	Percent.
Posterior	32	25.6%
Lateral	31	24.8%
Anterolateral	24	19.2%
Anterior	21	15.5%
Posterolateral	17	13.6%
Total	125	100%

RESULTS

Table 6. Postoperative follow up period

Follow Up Period	No. of cases	Percent.
6-9 months	5	4.0%
9-12 months	16	12.8%
12-15 months	83	66.4%
15-18 months	21	16.8%
Total	125	100%

Original article

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Required length of follow-up after transanal advancement flap repair of high transsphincteric fistulas

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"follow up can therefore be restricted to the point of time on which complete healing of the fistula is observed"

Abstract

Objective Repair of high transsphincteric fistulas is a major surgical challenge. Repair by transanal advancement flap (TAF) provides these fistulas. Initially reported, more recent in one out of three patients was to determine the needed to assess the high transsphincteric fistulas.

Method Between 1992 and 2006, 80 patients with a high transsphincteric fistula were treated. All patients were studied median healing time was 34 months. The incidence of recurrence was 10% at 34 months. The incidence rate among these was 0.7%, compared with 0.2% in patients with a low transsphincteric fistula. Examining the recurrence rate at 48 and 72 months, the incidence rates are significantly increasing, indicating the recurrence rate of expander-advancement flaps after 72 months is higher than predicted by the incidence after 48 months in patients due to Crohn's disease. In our opinion, it is not feasible to determine the optimal follow-up time for these fistulas. Our data show that assessing the length of follow-up after TAF in patients with high transsphincteric expander-advancement flaps can therefore be restricted to the healing time.

- 2** Ooi S. Management of high recurrent anal fistulas. *Surgery* 1998; 132: 834–8.
- 3** Rutledge RH, Miltzow SJ, Stoeckli RT et al. Endorectal advancement flap repair of transsphincteric and rectovaginal complicated rectoanal fistulas. *Dis Colon Rectum* 2003; 46: 925–9. discussion 929.
- 4** Agarwal BB, Plastino A, Hayashi TT et al. Advanced advancement flap for the treatment of anal fistulas. *Adv Colorectal Dis* 2004; 20: 40–6.
- 5** van der Heijden PT. Flap advancement and flap transposition for complex rectal fistulas. *Br J Surg* 1998; 85: 103–10.
- 6** Silenboni MR, Zanocchini P, D'Onise R, Braga PM. Transanal advancement flap for the repair of transsphincteric fistulas. *Dis Colon Rectum* 2006; 49: 1443–50. discussion 1445.
- 7** Sessoli T, Ryall T, Posticard MC et al. Characteristics of primary repair of rectovaginal fistulas using the transanal advancement flap. *Int J Colorectal Dis* 2002; 19: 424–7.
- 8** van der Heijden PT, Baeten CG, Sauerwein PH et al. Long-term outcome following transanal advancement flap for high transsphincteric fistulas and fistulotomy for low rectovaginal fistulas. *Int J Colorectal Dis* 2006; 21: 103–10.
- 9** van der Heijden PT, Baeten CG, Sauerwein PH et al. Advanced advancement flap for the treatment of complex rectovaginal fistulas. *Int J Colorectal Dis* 2006; 21: 793–90.
- 10** Johnson WM, Munro GE, Watson CL et al. Endorectal advancement flap repair of complex rectovaginal fistulas. *Br J Surg* 2000; 87: 612–9.
- 11** Vleminckx DH, Heijnen JP, Gosselink MP et al. New technique for fistula repair: an expander-advancement flap repair of tissue optimization. *Dis Colon Rectum* 2003; 46: 910–21.
- 12** Gosselink MP. Endorectal transanal advancement flap: the preferred method for repairing expander-advancement flaps in the treatment of rectovaginal fistulas. *Dis Colon Rectum* 2006; 49: 1446–50.
- 13** Ooms PE, Miltzow M, de Mrijdt M et al. Length of follow-up after fistulotomy and fistuloplasty associated with expander-advancement flap repair. *Int J Colorectal Dis* 2007; 22: 113–9.
- 14** Oosterwijk CJ, Phadke GS, Gosselink MP et al. Long-term analysis of expander-advancement flap for complicated rectovaginal fistulas. *Dis Colon Rectum* 2006; 49: 1410–4.

FISTULA HEALING VS. COMPLICATIONS

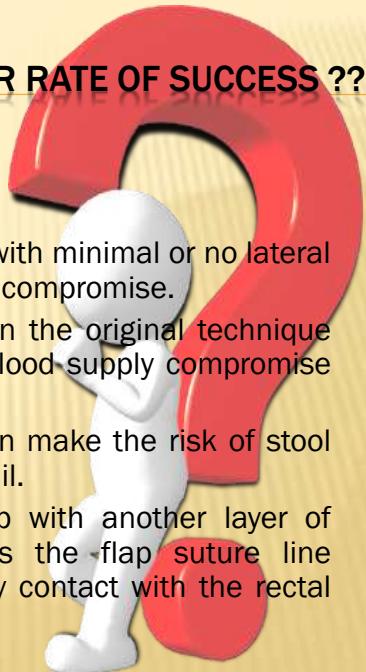
Table 7. Fistula healing vs. complications

Complications	Frequency	Percent
Complete healing	115	92%
Flap necrosis	3	2.4%
Recurrence	3	2.4%
Perianal abscess	2	1.6%
Bleeding	1	0.8%
Perineal necrosis	1	0.8%
Total	125	100%

WHY OMAF TECHNIQUE HAS HIGHER RATE OF SUCCESS ??

Postulations:

- ✖ the shape of the flap is a sleeve like with minimal or no lateral incision with less risk of blood supply compromise.
- ✖ the number of stitches is lesser than the original technique and that also decrease the risk of blood supply compromise to the edges of the flap.
- ✖ the absence of lateral (sides) incision make the risk of stool accumulation under the flap almost nil.
- ✖ covering the suture line of the flap with another layer of proximal redundant mucosa makes the flap suture line completely separate and without any contact with the rectal content **at least for sometime.**



CONCLUSION

The overlapping modification and changing the flap shape applied to the mucosal advancement flap, seems to be associated with a higher success rate than the classical mucosal advancement flap technique.

A comparative prospective study is needed to substantiate those results.

REFERENCES

- ✖ Corman ML. Anal Fistula. *Colon & Rectal Surgery*. 5th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2005. Chapter 11.
- ✖ Charles Brunnicardi F. et al. Schwartz's principles of surgery. 9th ed. United state of america: McGraw Hill, 2010.
- ✖ Perianal fistulas: developments in the classification and diagnostic techniques, and a new treatment strategy. van Koperen PJ, Horsthuis K, Bemelman WA, Stoker J, Slors JF. *Ned Tijdschr Geneeskd*. 2008 Dec 20;152(51-52):2774-80.
- ✖ Ortiz H, Marzo J: Endorectal flap advancement repair and fistulectomy for high trans-sphincteric and suprasphincteric fistulas. *Br J Surg* 2000, 87(12):1680-3.
- ✖ Madbouly KM¹, El Shazly W, Abbas KS, Hussein AM. Ligation of intersphincteric fistula tract versus mucosal advancement flap in patients with high transphincteric fistula-in-ano: a prospective randomized trial. *Dis Colon Rectum*. 2014 Oct;57(10):1202-8.
- ✖ Rojanasakul A (September 2009). "LIFT procedure: a simplified technique for fistula-in-ano". *Tech Coloproctol* 13(3): 237-40.
- ✖ van Onkelen, RS; Gosselink, MP; Schouten, WR (February 2012). "Is it possible to improve the outcome of transanal advancement flap repair for high transphincteric fistulas by additional ligation of the intersphincteric fistula tract?". *Diseases of the colon and rectum* 55 (2): 163-6.
- ✖ Mitalas LE¹, Gosselink MP, Oom DM, Zimmerman DD, Schouten WR. Required length of follow-up after transanal advancement flap repair of high transphincteric fistulas. *Colorectal Dis*. 2009 Sep;11(7):726-8.
- ✖ Changhu Liang, MD, Yongchao Lu, MD, Bin Zhao, MD, Yinglin Du, BA, Cuixian Wang, MD, and Wanli Jiang, MSc. Imaging of Anal Fistulas: Comparison of Computed Tomographic Fistulography and Magnetic Resonance Imaging. *Korean J Radiol*. 2014 Nov-Dec; 15(6): 712-723.
- ✖ Ratto C, Grillo E, Parello A, Costamagna G, Doglietto GB. Endoanal ultrasound-guided surgery for anal fistula. *Endoscopy*. 2005 Aug;37(8):722-8.

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- ✖ Golub RW, Wise WE Jr, Kerner BA, Khanduja KS, Aguilar PS. Endorectal mucosal advancement flap: the preferred method for complex cryptoglandular fistula-in-ano. *J Gastrointest Surg*. 1997 Sep-Oct;1(5):487-91.
 - ✖ Mizrahi N, Wexner SD, Zmora O, Da Silva G, Efron J, Weiss EG, Vernava AM 3rd, Nogueras JJ. Endorectal advancement flap: are there predictors of failure?. *Dis Colon Rectum*. 2002 Dec;45(12):1616-21.
 - ✖ Zimmerman DD¹, Briel JW, Gosselink MP, Schouten WR. Anocutaneous advancement flap repair of transphincteric fistulas. *Zimmerman DD¹, Briel JW, Gosselink MP, Schouten WR*.
 - ✖ Mitalas LE¹, Gosselink MP, Zimmerman DD, Schouten WR. Repeat transanal advancement flap repair: impact on the overall healing rate of high transphincteric fistulas and on fecal continence. *Dis Colon Rectum*. 2007 Oct;50(10):1508-11.



Thank you